Water Quality Protection

- Liner System and Performance
- Monitoring Systems
- Groundwater

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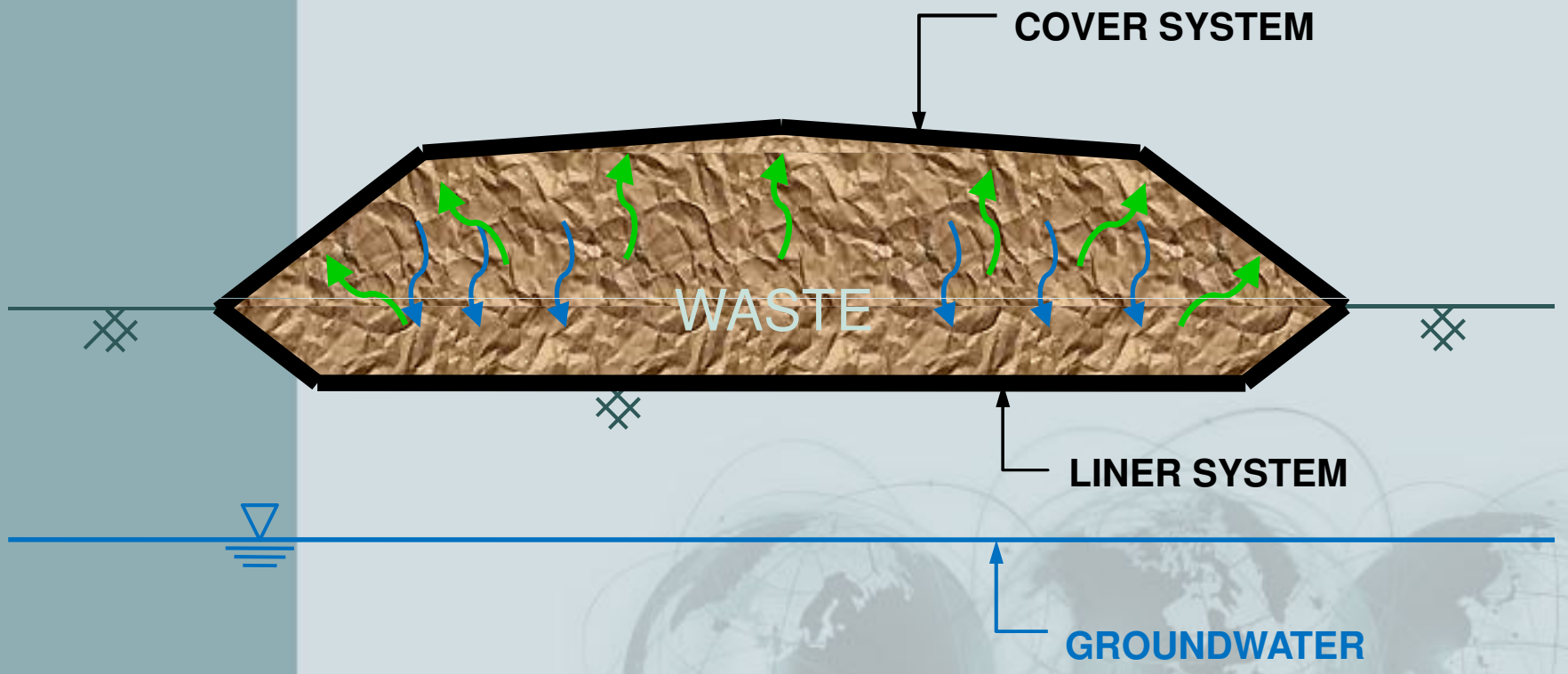
Landfill Waste Byproducts



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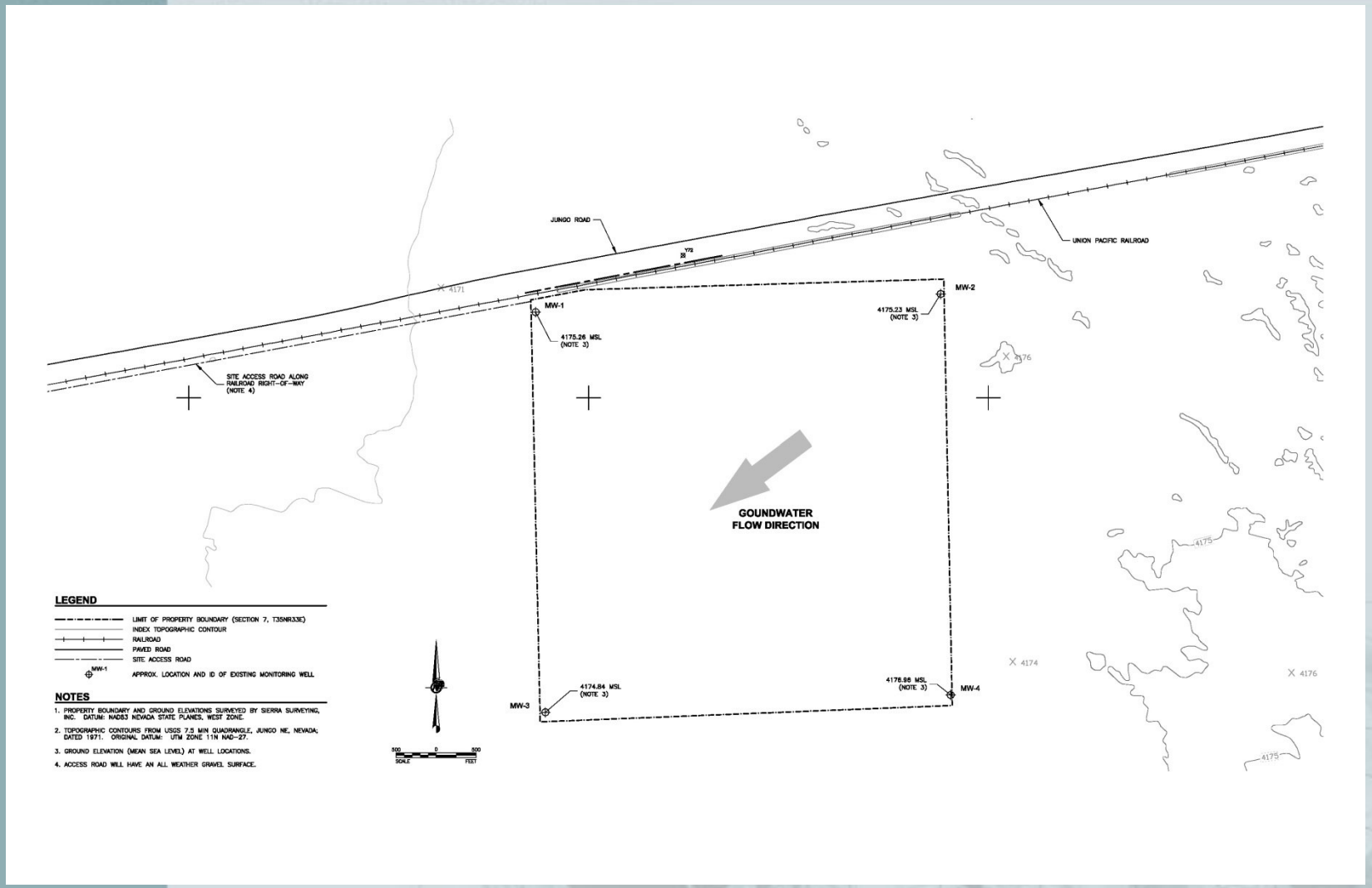
Site Plan



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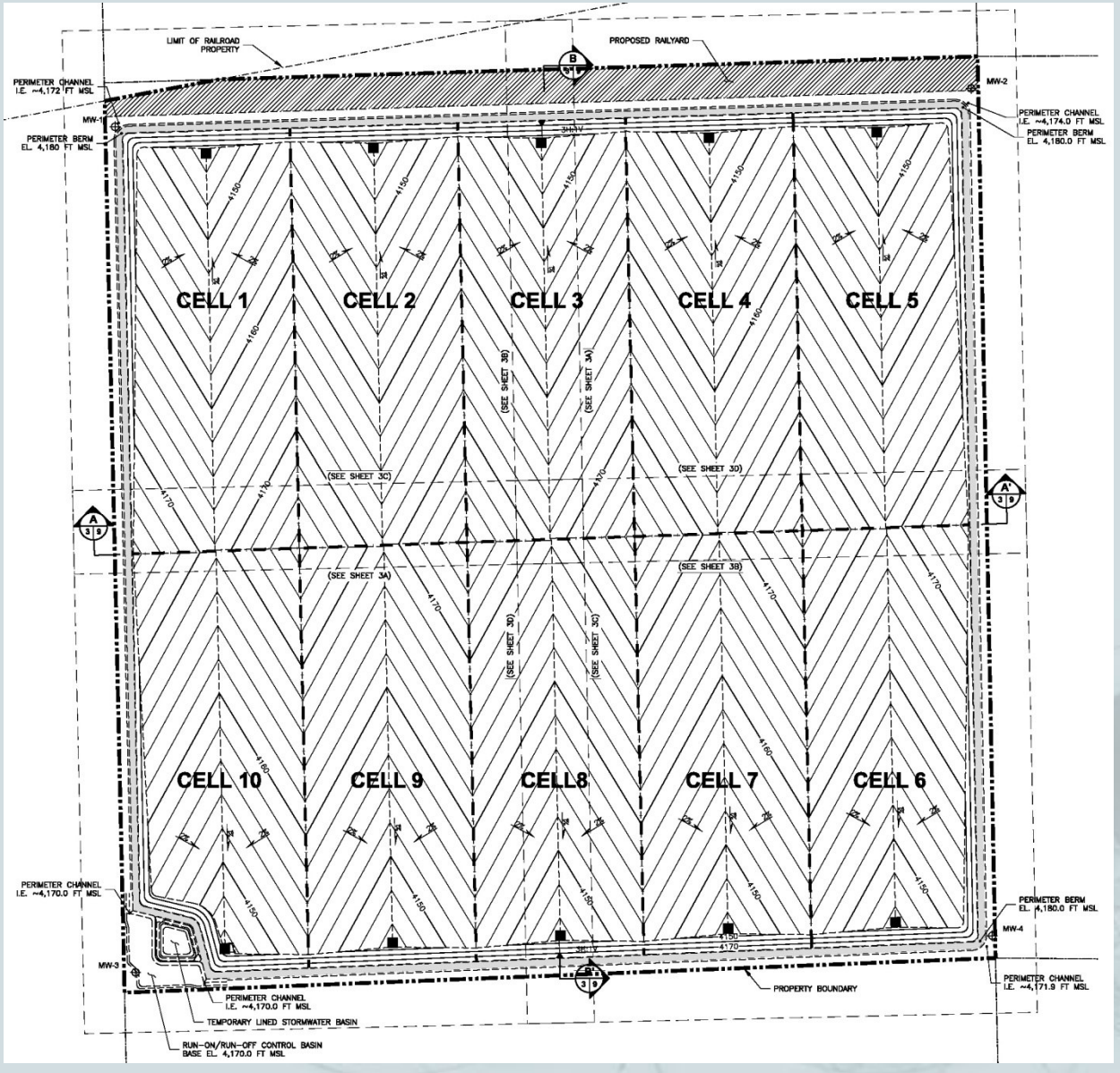
Liner Grading Plan



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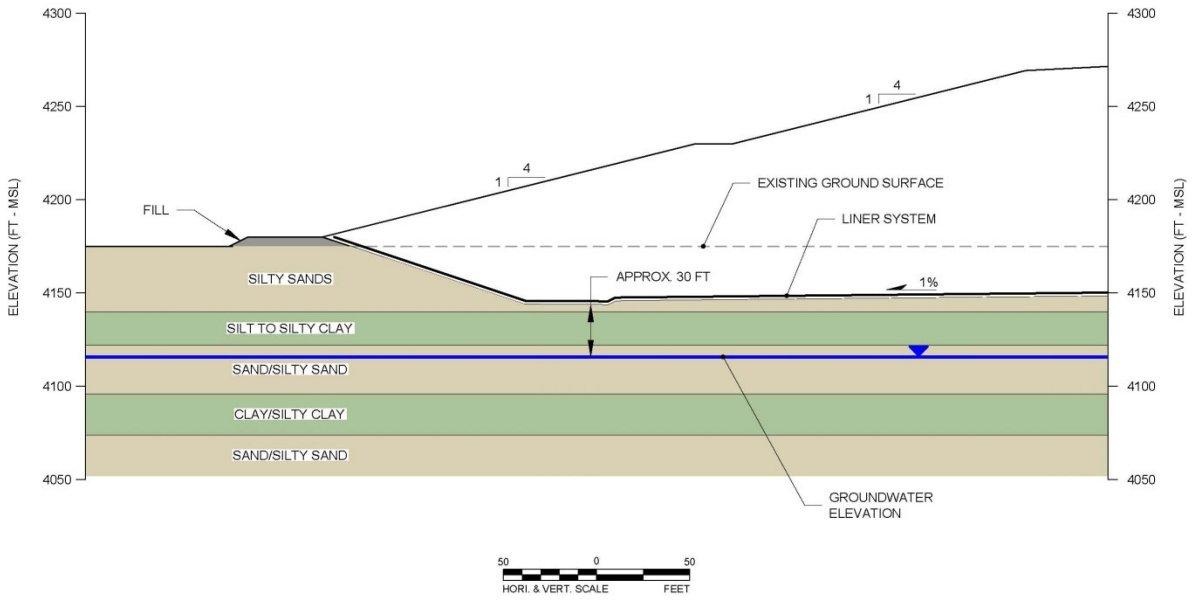
Typical Cross-Section



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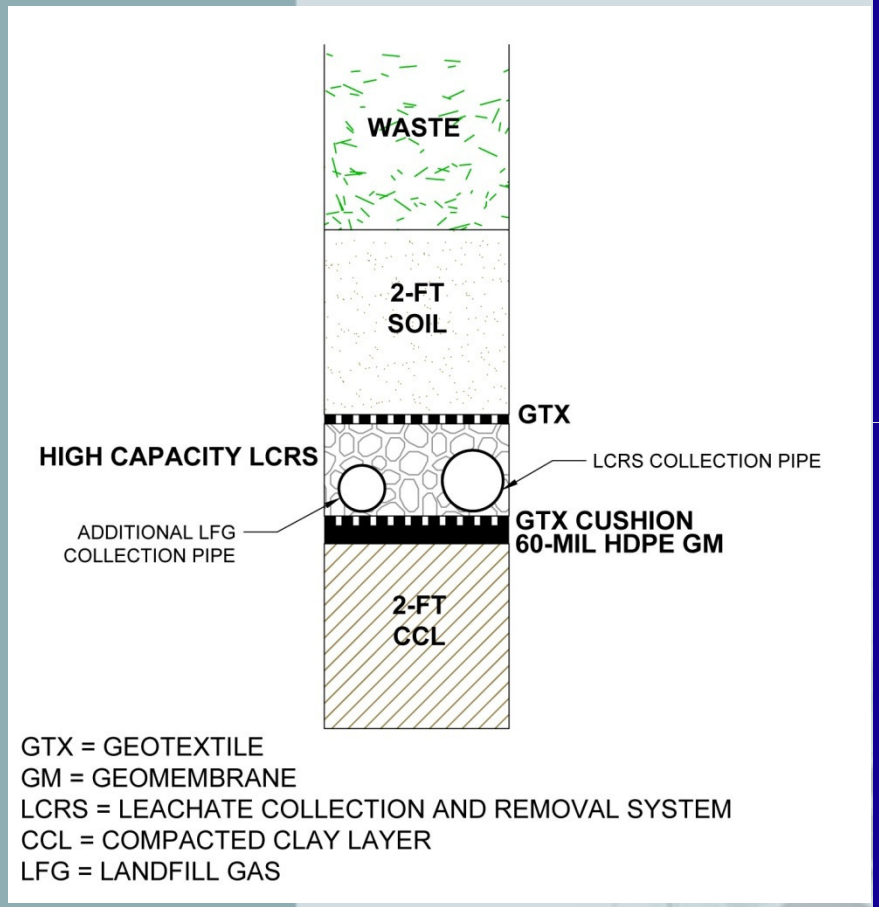
Leachate Sump

Jungo Liner System



Liner Design Enhancements

1. **High Capacity Blanket Type LCRS**
   - Regs Require 12-In. Max Leachate Depth
   - Jungo Leachate Depth << 1-In.
2. **Thick Operations Soil Layer**
   - Regs Do Not Require Ops Layer
   - Jungo Ops Layer 2-Feet Thick
3. **Early LFG Control**
   - Regs Require LFG Control in Compliance with Air Regs
   - Jungo Will Install LFG Controls as Early as Practical
4. **LFG Collection Within LCRS**
   - Regs Do Not Require LFG Control in LCRS
   - Jungo Will Install LFG Controls Within LCRS to Allow Maintenance of Vacuum Above Liner

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Performance of Modern Liners

2002 EPA Study

- 187 Double-lined Cells: Measured Efficiency of the Upper Composite Liner
- Composite Liners Perform Very Well: Average Efficiency Estimated to be 99.96%

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Construction Quality Assurance

- Detailed CQA Plan to be approved by NDEP prior to construction
  - Plan Establishes minimum testing frequencies and testing types
  - Performed by Independent 3rd Party Firm that Specializes in CQA
  - CQA Documentation Submitted to NDEP for Review and Approval prior to Disposal
- Recology Uses Enhanced CQA Techniques

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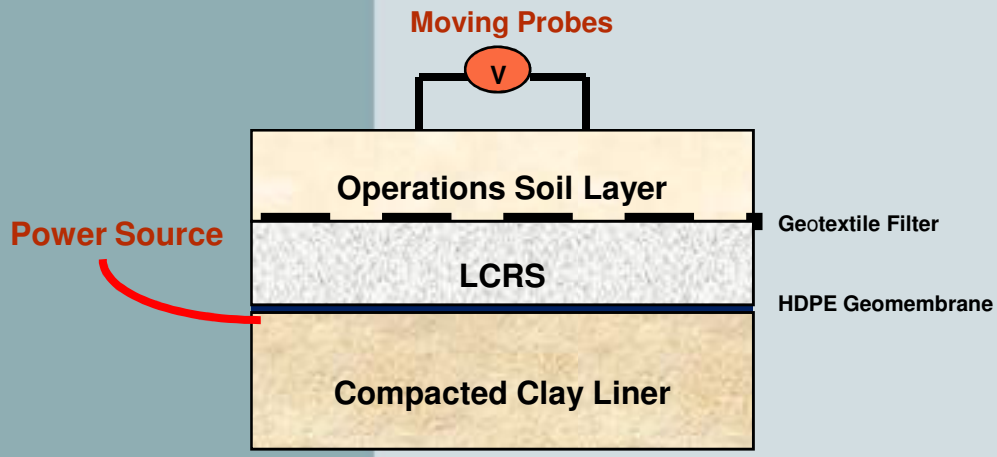
Enhanced CQA – Geoelectric Surveys



Electrical Potential Measurement

Power Source

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Monitoring Program

- Perimeter Groundwater Monitoring Wells
- Perimeter LFG Probes
- Surface Water Monitoring
- Record Flow From Leachate Pumps
- Monthly Inspection of Sumps
- Periodic Testing of Leachate per Monitoring Plan

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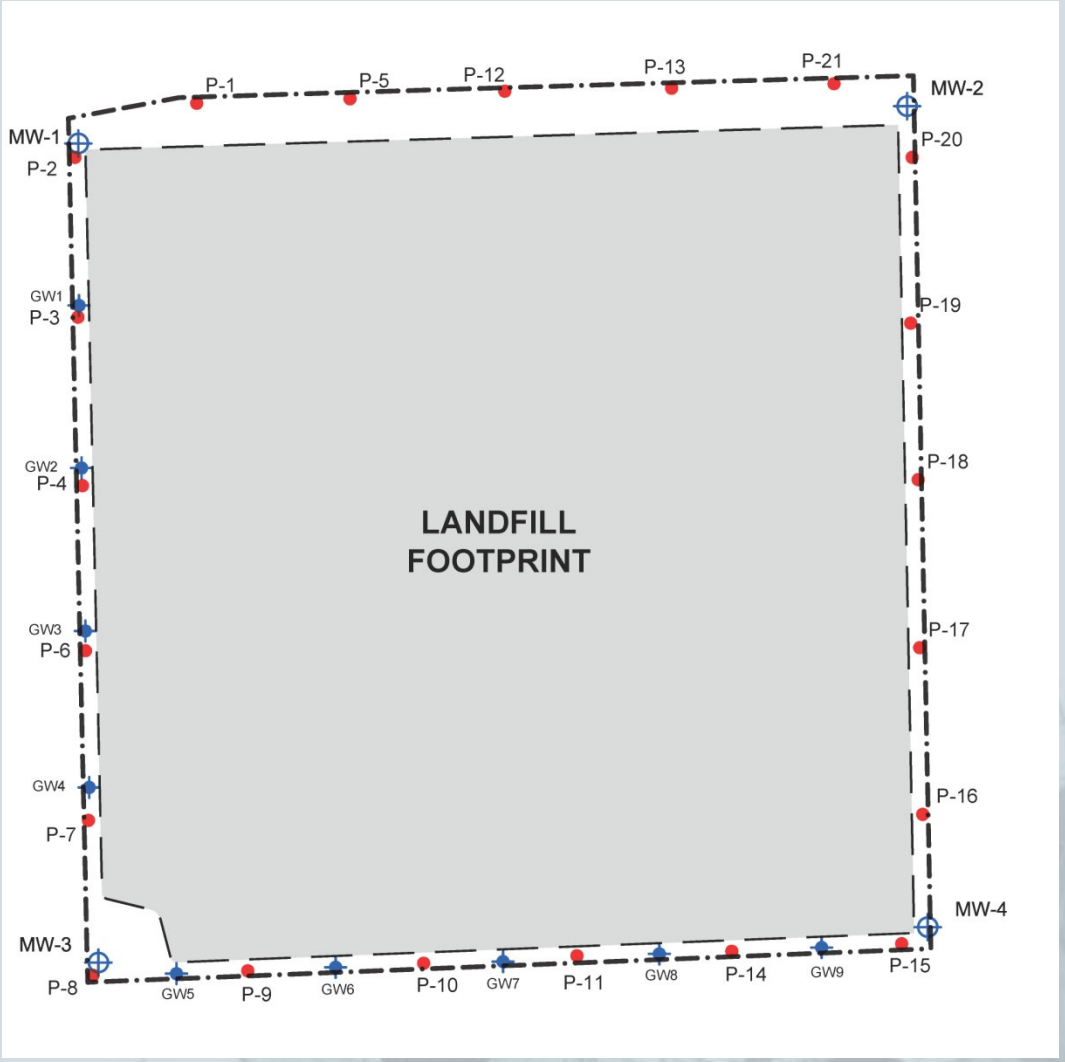
Monitoring Program



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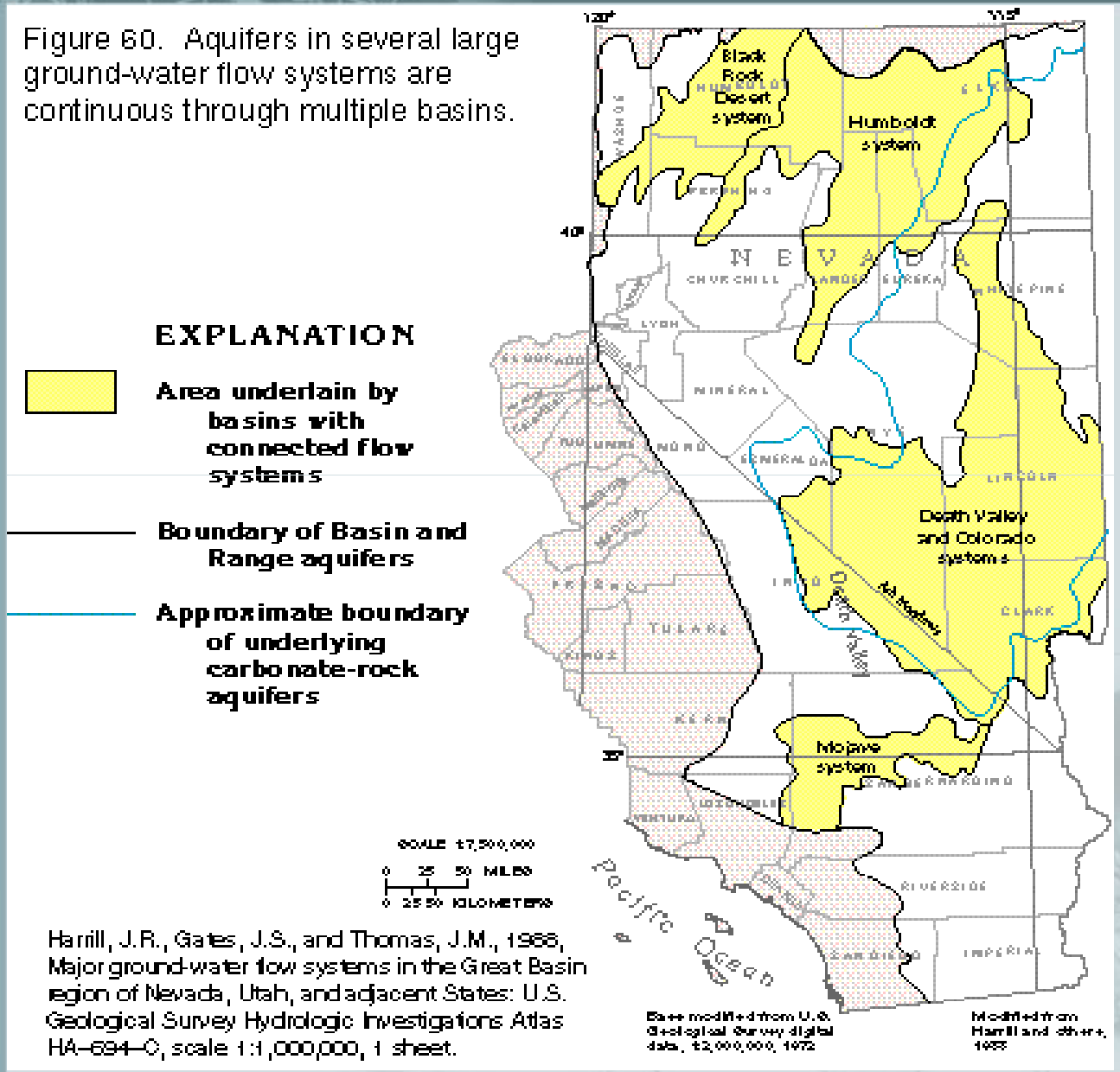
USGS GROUNDWATER ATLAS

Figure 60. Aquifers in several large ground-water flow systems are continuous through multiple basins.



Harrill, J.R., Gates, J.S., and Thomas, J.M., 1988, Major ground-water flow systems in the Great Basin region of Nevada, Utah, and adjacent States: U.S. Geological Survey Hydrologic Investigations Atlas HA–694–C, scale 1:1,000,000, 1 sheet.

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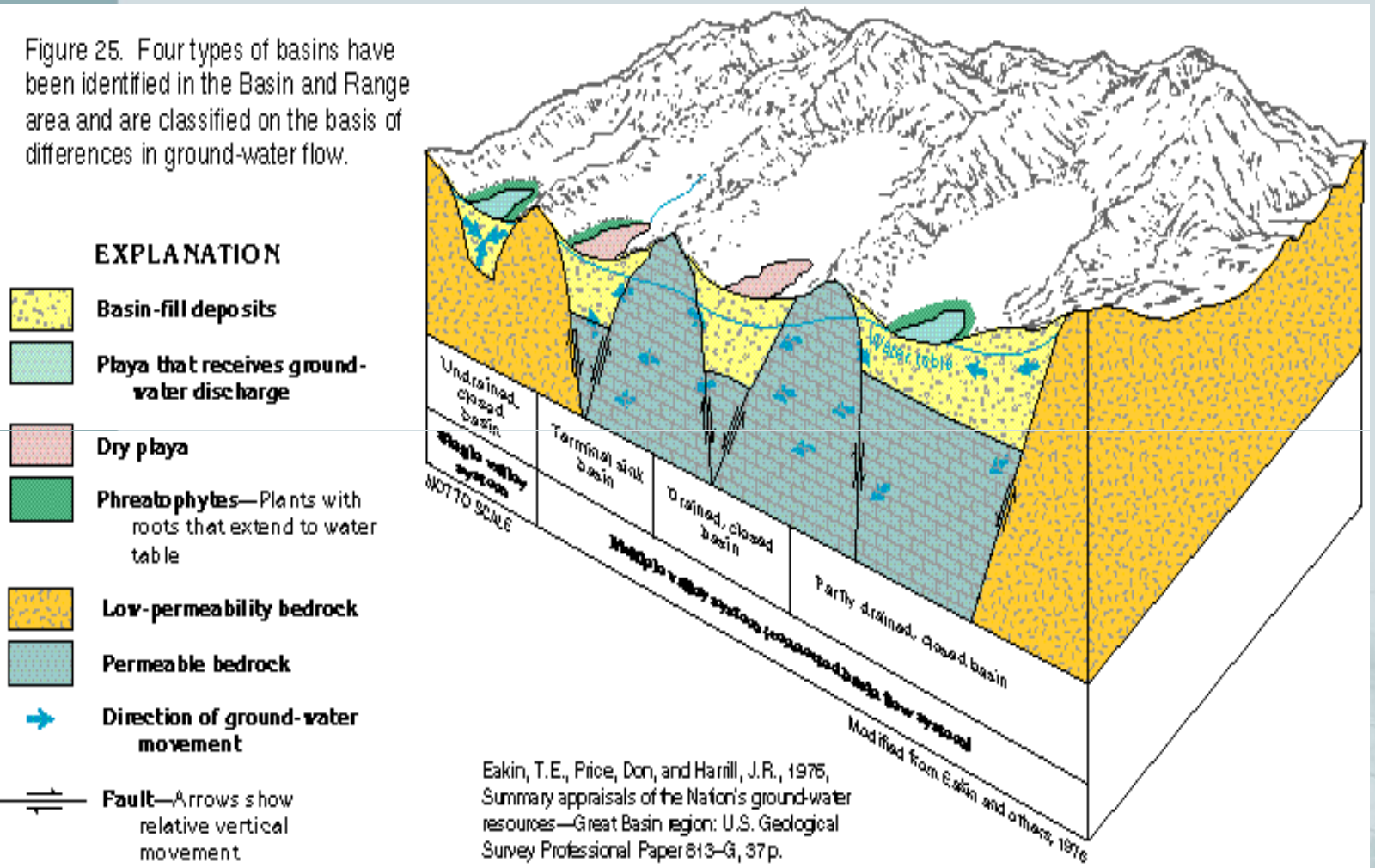
Types of Groundwater Basins

Figure 25. Four types of basins have been identified in the Basin and Range area and are classified on the basis of differences in ground-water flow.



Eakin, T.E., Price, Don, and Harrill, J.R., 1976, Summary appraisals of the Nation's ground-water resources—Great Basin region: U.S. Geological Survey Professional Paper 813-G, 37p.

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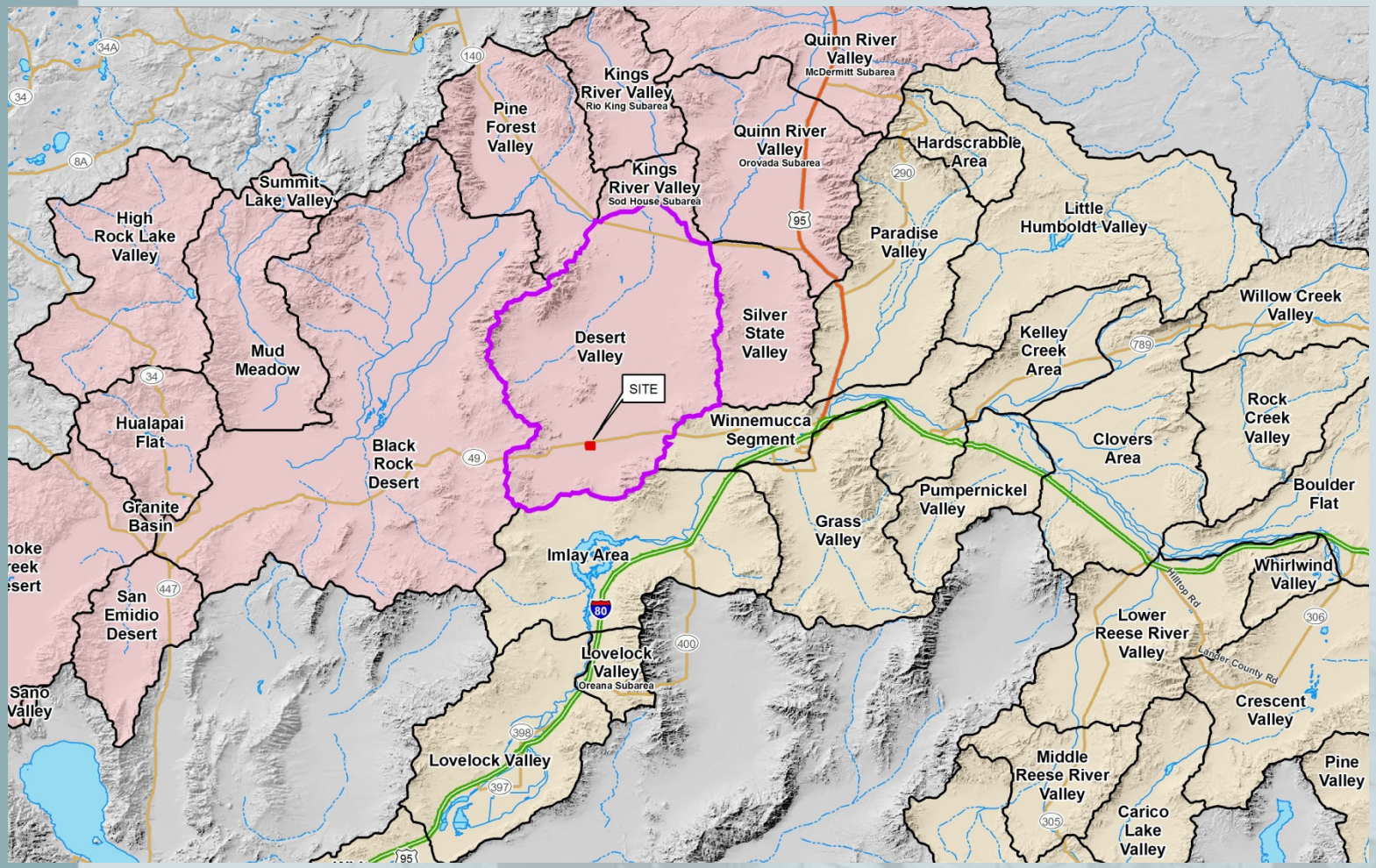
Humboldt and Black Rock Desert Basins



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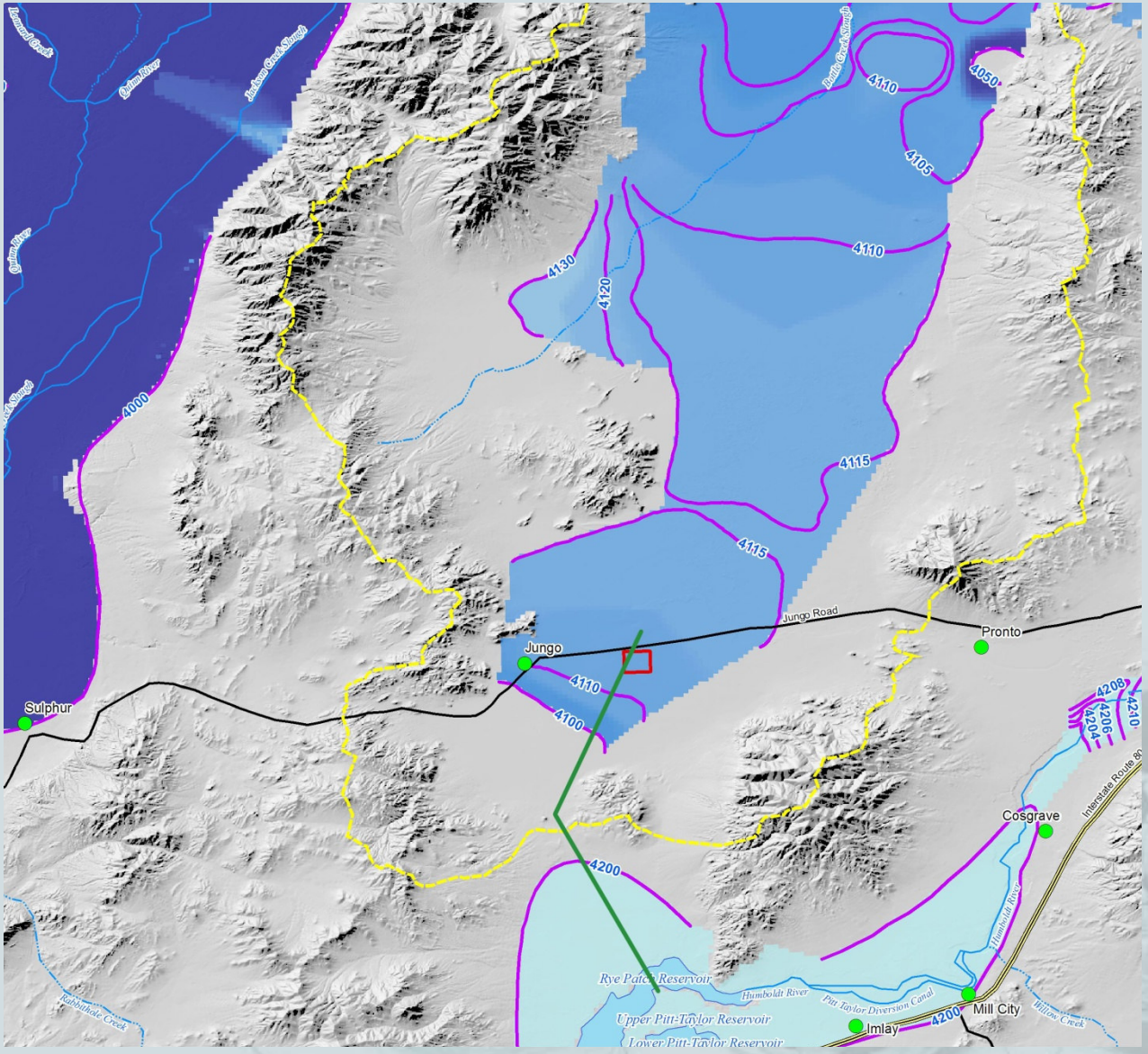
Regional Groundwater Flow



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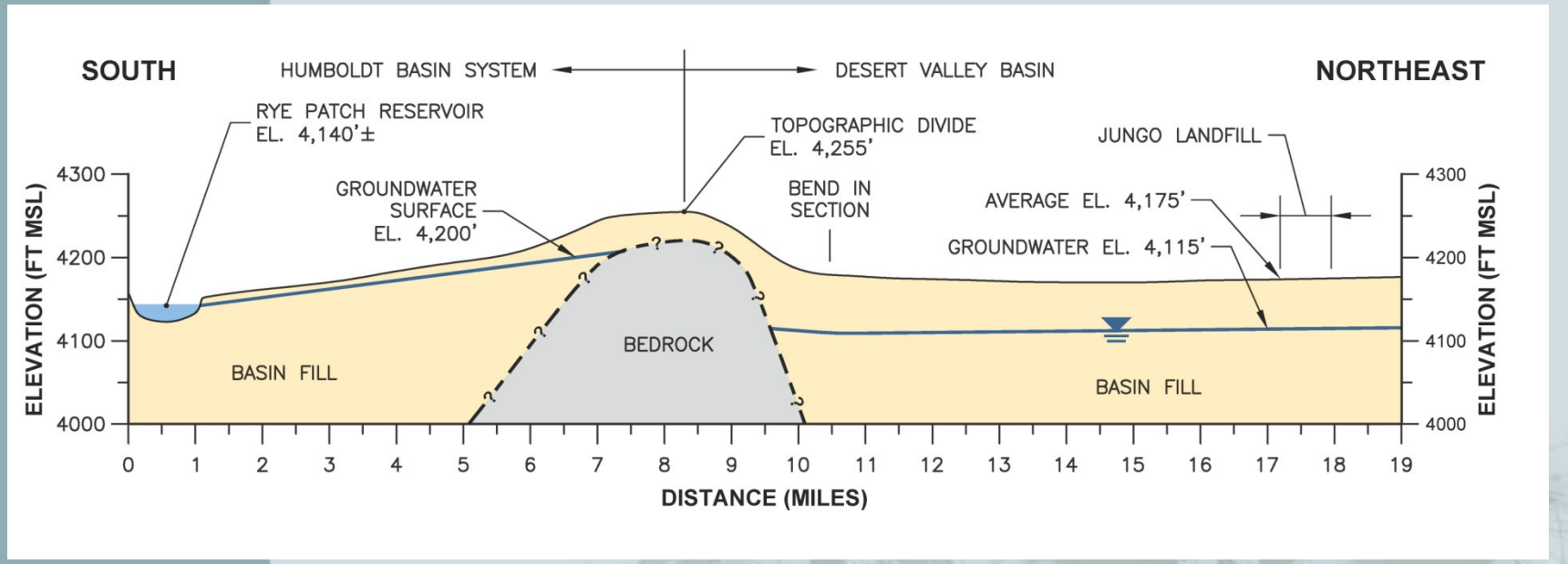
Cross Section Between JDS and Rye Patch Reservoir



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